months the narrowed condition was as bad or worse than ever in most cases. Twenty years ago, at Sir James Simpson's instigation, he operated in many cases, and all but abandoned the operation on account of these relapses. Since then he had generally used very small sponges if he wished to dilate, and had never once had an accident. The attacks of inflammation that had occurred in the hands of others had no doubt been caused by the attempted dilatation of inflamed tissues. The cervical canal ought to be perfectly sound when it was interfered with. In conclusion he repeated that he quite agreed with Dr. Tilt that the uterus is now-a-days too frequently interfered with surgically, and that the indications for operations required better defining.

Mr. BAKER BROWN said he thought the paper was brought forward at a most appropriate time, for he perfectly agreed with the author and with the observations of Dr. Henry Bennet that operations upon the cervix uteri were performed too frequently, and without proper regard to preparatory and subsequent treatment. He was glad to have the opportunity of stating before the Society, in the strongest language, his reprehension of the rashness with which this operation was performed in both the out-patients' department of hospitals and the consulting rooms of the operator. He had always taught that the operation of dividing the os and cervix uteri was one of great danger; and although he had performed it a vast number of times, he had never done so without careful preparatory treatment, and the most absolute rest for two or three weeks after the operation. He thought the danger was also increased by the frequent division of the internal os. For his own part, in all cases of flexions, he simply divided the cervix up to, but not through, the internal os; but in all cases of uterine hemorrhage or intra-uterine fibroid tumours, he then carried his incision through the internal os. In all cases, immediately after the operation, he plugged with oiled lint, and took every precaution to prevent the admission of atmospheric air. He believed the neglect of these precautions would generally account for the untoward results which so frequently followed the operation. He could confirm all that Dr. Bennet had said as to the opposition and persecution he had met with in reference to his treatment of uterine diseases; and when he reflected how triumphantly Dr. Bennet had overcome all his opponents by the truth of his practice, he (Mr. Brown) felt consoled for the opposition he received for publishing the results of his experience on a subject of which he as yet confessed himself to be but a learner. But as he had always, through a long professional career, immediately published any innovation which he had believed to be practically useful, so he would continue unto the end, feeling sure that the majority of the profession would always honestly investigate anything which he might place before them.—*Lancet*, Aug. 25, 1866.

HYGIENE.

51. *Organic Impurities in Water.*—No fact is better established than that the use of impure water exercises a very injurious influence on health. Dr. WM. PROCTOR has lately published (*Lancet*, Sept. 8th, 1866) some remarks on the subject which are well worthy of attention. The organic impurities of water are of two kinds: they occur either in a state of solution or in a solid form. There is a curious circumstance pointed out by Dr. P. with regard to the production of the different kinds of organisms found in water, which is that if the water be alkaline, infusoria chiefly show themselves; but if acid, fungoid vegetations were most numerous.

"Almost all water contains some organic matter derived from the soil. Even that from granitic districts contains from 0.3 to 0.7 grains per gallon, whilst water which has permeated vegetable soil may afford 12 to 30 or even more grains per gallon.

"Confining our attention only to the soluble organic matter, this will be found of two kinds—(1) non-nitrogenous, composed of carbon, hydrogen, and oxygen, the result of vegetable decomposition; (2) nitrogenous, made up of carbon, hydrogen, oxygen, and nitrogen, from the decomposition of animal matter. Occasionally sulphur and phosphorus are added to these constituents; but when this is the case, the odour produced by the resulting sulphuretted or phosphuretted hydrogen at once reveals their presence. Therefore, practically, the elements of noxious and insidious organic matter will be carbon, hydrogen, oxygen, and nitrogen. An invariable result of the decomposition of all animal matter is ammonia, and as the result of a similar change on vegetable matter Hermann has given a list of ten distinct substances. But, without entering into needless detail, we will simply consider the general results of vegetable decay.

"When vegetable mould or humus is boiled with an alkali and an acid is added to the filtered solution, a brown precipitate falls, which (according to Mulder) consists of

Humic acid	$C_{40}H_{12}O_{12}$
Ulmic acid	$C_{40}H_{14}O_{12}$
Geic acid	$C_{40}H_{17}O_{17}$

These substances are all soluble in alkalies and precipitated from that solution by acids. There are two other constituents of humin, the so-called crenic and apocrenic acids, to which the term 'acid' is improperly applied, as they are soluble in acids as well as alkalies. In the formation of these acids no notice has been taken of the contemporaneous formation of carbonic acid and carburets of hydrogen. The decomposition of animal matter gives rise to an extensive series of compounds, among which ammonia and the nitrates prevail largely with the fatty acids and other substances not well understood. One great character of the organic vegetable acids the result of decomposition is their disposition to unite with ammonia—in fact, unless prepared pure by artificial means, they always occur in water with 2.5 to 7 per cent. of ammonia.

"The sources of nitrogenous organic matter are evident and numerous, and are derived from animal excreta or from decomposing animal matter and the refuse of manufactories. The contents of sewers or cesspools drain into springs or rivers, or the water permeates soil more or less impregnated with these things. Water may be contaminated in this manner by a nuisance at a considerable distance from it, but dependent on the porosity or tenacity of the soil. Professor Ansted states that the deepest (non-artesian) well will not drain a circle which is more than half a mile in radius.

"Organic matter in water may be detected by adding to it a few drops of solution of gold and boiling; in proportion to the amount of organic matter, the gold is reduced and precipitates as a dark powder. The alkaline permanganates are extremely useful in this respect: when solutions of these salts are placed in contact with oxidizable organic matter, they speedily lose their beautiful pink colour, the solution becomes colourless, depositing at the same time a brown precipitate. The addition of a few drops of permanganate of potash to water, and undergoing this change, indicates the presence of organic matter. The rationale is simple. The permanganate of potash is a substance rich in loosely combined oxygen; with that agent it oxidizes the organic matter which is destroyed, the permanganic acid itself is deoxidized, reduced to the binoxide, and precipitated. Dr. R. Thompson made a general estimate of the quantity of organic matter by a series of solutions of different strengths, noting the time required to destroy the several colours on the addition of a given quantity of the water to be examined.

"The estimation of the actual amount of organic matter present in water is of vast importance, and is not a matter of difficulty. This is obtained chiefly by two methods—(1) Evaporate a known quantity of the water in a platinum dish on the water bath, having previously added a measured quantity of a solution of carbonate of soda of known strength. The evaporation being completed, the dish is exposed to a temperature of 248° to 260° in an oil bath, and continued until it ceases to lose weight. It is now weighed, and the weight of the dish and the carbonate of soda being subtracted gives the amount of solid residue in the quantity of water employed. The dish with the residue is now exposed to a dull-red heat until all the organic matter is destroyed. When cool a solution of carbonic acid is added, and the dish again dried until its weight is constant. The difference between this last weight and that before ignition represents the amount of organic and other volatile matter present. (2) The other method of estimation is by permanganate of potash, and has been carefully investigated by Dr. Woods (*Journ. of the Chem. Soc.*, June, 1863). Weigh one gramme (15.43 grains) of dry permanganate of potash, and dissolve in 1 litre (35.28 fluidounces) of pure distilled water, then graduate the solution with oxalic acid by taking 40 c.c. of centinormal oxalic acid (*i. e.*, 0.63 grammes of the acid in 1 litre of water) in 300 c.c. of pure water and 2 c.c. of sulphuric acid, heating to 140° Fahr., and dropping in the permanganate from a burette; 13 c.c. of the pink solution should be exactly decolorized. If not, the correction must be made by a little calculation. Then take 1 litre of the water to be examined, add 2 c.c. of strong sulphuric acid, heat to 140°; remove the heat; drop in the standard solution from a burette, stirring continually, and stop when the faintest pink tint is perceptible. If after a time this disappears, add a little more of the permanganate, and so on until a tint permanent for half an hour is obtained. Then read the number of c.c. used; deduct 0.24 cc. as the quantity of permanganate necessary to give a red tinge to 1 litre of water. We have now the quantity of permanganate decolorized by 1 litre of the water, and Dr. Woods has ascertained that 1 c.c. of solution of the above strength is decomposed by 0.005 grammes (=5 milligrammes) of oxidizable organic matter; therefore multiply the number of c.c. of permanganate solution by 0.005, and the result gives the amount of organic matter in grammes per litre, or, to bring it to grains per gallon, multiply it by 70. This gives of course only the amount of oxidizable organic matter, and is used by Dr. Frankland and others to determine the amount of oxygen necessary for this purpose. Therefore, nitrites, &c., may exist and not be detected by this process. It is not applicable to waters containing protosalts of iron or hydrosulphuric acid.

"Having in this manner proved the existence and quantity of impurity, the next point for consideration is the purification of such water. Ordinary filters simply remove suspended matters; ebullition destroys (and vast is its importance) the vitality of animal and vegetable impurities. But filtration carried on through sand and clay or animal charcoal not only deprives water of mechanical impurities, but, in the latter case especially, removes from it organic matter most effectually, and in all probability by a process of oxidation.

"The tendency of the physiology of the present day is to show that the origin of zymotic diseases is due to the presence of living germs capable of remaining dormant until they are placed in a condition appropriate and necessary for their development. If this is so, and such sources of disease may exist in water, it is questionable if they are, like dead organic matter, susceptible of destruction by oxidation. It is a certain fact that these organisms are capable of destruction by a number of caustic substances, as salts of iron, carbolic acid, etc., which are impracticable when water has to be used for dietetic purposes. The temperature of boiling water likewise destroys the vitality of these germs, admits of practical application, and is in this respect a perfect purifier. Whilst it is doubtful how far the use of filtration through charcoal and permanganate of potash is effectual in the removal of insidious living germs, no doubt can exist of its efficacy in the removal of dead and noxious organic matter. Hence, by a combination of these three methods, the danger of disease from these sources is removed.

"Dr. Medlock has offered a suggestion for the removal of organic matter from water. He observed that water of this description had the amount of organic matter materially lessened after passing through iron pipes—the action of the metal upon that matter being an oxidizing one, converting the nitrogen into nitrous acid, and in this manner breaking up the affinities of the carbon, hydrogen, and oxygen. He states that, by allowing water to remain in contact with a coil of iron wire for twelve hours, all trace of organic matter is removed, or that it is converted from a soluble into an insoluble state, and in this condition capable of being removed by ordinary filtration.

"The superiority of the permanganates for purifying water over filtration through animal charcoal may be shown by passing water containing organic matter through the latter substance; on testing this filtered liquid with Condy's fluid, it will become in many cases decolorized. The simplicity of the process is one of its great advantages, and even if, from careless application, a portion of the salt is left in solution, or of the peroxide of manganese in suspension, no harm can result. But if the adjustment is carefully made, all the metallic oxide is precipitated, as well as the carbonate of lime (if present) held in solution by excess of carbonic acid, which is neutralized by the liberated alkali of the permanganate, and the water by simple decantation is obtained pure, except probably (when used alone) in the destruction of some organic germs.

"In sulphur water—*i. e.*, that containing hydrosulphuric acid, sulphurous acid, etc.—the colour will be destroyed in the test (on account of the deoxidizing properties of these gases) without the presence of organic matter, and the water left free from impurity with the precipitation of the oxide of manganese and free sulphur. If sulphide of ammonium is present, carbonate of ammonia is formed. Lead, iron, and copper can be separated from water by the same method.

"In the application of these salts to the purification of water on a large scale, many questions of economy are involved, but, as Dr. Letheby remarks, 'it must not be forgotten that only a very small part of the water delivered by a company is used for primary domestic purposes, the great bulk of it being employed for flushing closets, drains, and sewers, for watering streets, and for many manufacturing purposes. It would therefore manifestly be an unnecessary wasteful application of a tedious and expensive process to do that at the works which can be so easily, so surely, and so much more economically done at the point of consumption.'

"Water which is employed for drinking purposes should possess the following properties: It should be clear, colourless, inodorous, and tasteless; it should be well aerated, and especially cool. It is difficult to fix the exact amount of dissolved constituents. As a general rule, subject to limitation, it should not contain more than—of organic matter, 1 grain; of carbonate of lime, 16 grains; of sulphate of lime, 3 grains; of chloride of sodium, 10 grains; of carbonate of soda, 20 grains, per gallon."

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

52. *Poisoning by Tobacco-Juice.*—M. A. MARCHANT relates the following case: A smoker, in drawing air strongly through an obstructed pipe, in order to make it more permeable, took into his mouth and involuntarily swallowed a dislodged plug of inspissated tobacco-juice. In a short time his head became heavy, his thoughts confused, his speech indistinct; he had noises in the ears, a disagreeable feeling at the epigastrium, and dryness of the throat. Believing that the open air would remove these feelings, the patient went out; but the headache and giddiness increased, and the patient at last fell down insensible, in which condition he was after some time found by a passenger and carried into his house. Copious and repeated vomiting then set in; consciousness returned; but the patient fell into a restless, somnolent state. He had severe headache, *malaise*, and faintness, during the whole of the next day. The spontaneous recovery may be attributed either to the small amount of nicotine contained in the plug, or to the imperfect absorption of the poison contained in the hardened plug.—*Brit. and For., Med. Chir. Rev.*, April, 1866, from *Journal de Bruxelles*.

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53. *Death from Swallowing Four Ounces of Chloroform.*—E. C. BOARD, Esq., reports (*British Med. Journ.*, May 26, 1866) an interesting case of this. The subject of it was a strong, muscular porter, aged forty-two, addicted to drink, who took about four-ounces of chloroform, mistaking it for alcohol, and did not find out his error until after that quantity was swallowed. About an